

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Withdrawn): A method for producing a fucosylated glycoprotein, the method comprising:

contacting a recombinant fucosyltransferase protein with a mixture comprising a donor substrate comprising a fucose residue, and an acceptor substrate on a glycoprotein, under conditions where the fucosyltransferase catalyzes the transfer of the fucose residue from a donor substrate to the acceptor substrate on the glycoprotein, thereby producing a fucosylated glycoprotein,

wherein the recombinant fucosyltransferase protein comprises a polypeptide having greater than 90% identity to an amino acid sequence selected from the group consisting of SEQ ID NO:16 and 18.

2. (Withdrawn): The method of claim 1, wherein the polypeptide comprises an amino acid sequence having greater than 95% identity to an amino acid sequence selected from the group consisting of SEQ ID NO:16, 18, and 20.

3. (Withdrawn): The method of claim 1, wherein the polypeptide comprises an amino acid sequence selected from the group consisting of SEQ ID NO:16, 18, and 20.

4. (Withdrawn): The method of claim 1, wherein the polypeptide further comprises an amino acid tag.

5. (Withdrawn): The method of claim 1, wherein the method further comprises a step of purifying the fucosylated glycoprotein.

6. (Withdrawn): The method of claim 1, wherein the acceptor substrate is selected from a glucose residue and an N-acetylglucosamine residue.

7. (Withdrawn): The method of claim 1, wherein an acceptor substrate on the glycoprotein comprises Galb1-OR, Galb,3/4GlcNAc-OR, NeuAca2,3Galb1,3/4GlcNAc-Or, wherein R is an amino acid, a saccharide, an oligosaccharide, or an aglycon group having at least one carbon atom.

8. (Withdrawn): An isolated polynucleotide comprising a nucleic acid sequence, wherein the nucleic acid sequence has greater than 90% identity to a nucleotide sequence selected from the group consisting of SEQ ID NO:15 and 17, wherein the nucleotide sequence encodes a fucosyltransferase that catalyzes the transfer of a fucose residue from a donor substrate to an acceptor substrate.

9. (Withdrawn): The polynucleotide of claim 8, wherein the nucleic acid sequence is selected from the group consisting of SEQ ID NO:15 and 17.

10. (Withdrawn): The polynucleotide of claim 8, wherein the fucosyltransferase catalyzes the transfer of fucose to an acceptor molecule selected from an N-acetylglucosamine residue and a glucose residue.

11. (Withdrawn): An isolated polynucleotide comprising a nucleic acid sequence, wherein the nucleic acid sequence encodes a fucosyltransferase that catalyzes the transfer of a fucose residue from a donor substrate to an acceptor substrate, and wherein the fucosyltransferase comprises an amino acid selected from the group consisting of SEQ ID NO:16 and 18.

12. (Withdrawn): The polynucleotide of claim 11, wherein the fucosyltransferase comprises an amino acid tag.

13. (Withdrawn): An expression vector comprising the isolated polynucleotide of claim 8 or claim 11.

14. (Withdrawn): A host cell comprising the expression vector of claim 13.
15. (Withdrawn): A method of producing a fucosyltransferase protein, the method comprising the step of culturing the host cell of claim 14 under conditions suitable for expression of the fucosyltransferase protein.
16. (Withdrawn): An isolated polynucleotide comprising a nucleic acid sequence, wherein the nucleic acid sequence has greater than 90% identity to SEQ ID NO:19, wherein the nucleotide sequence encodes a fucosyltransferase that catalyzes the transfer of a fucose residue from a donor substrate to an acceptor substrate.
17. (Withdrawn): The polynucleotide of claim 16, wherein the nucleic acid sequence consists of SEQ ID NO:19.
18. (Withdrawn): The polynucleotide of claim 16, wherein the fucosyltransferase catalyzes the transfer of fucose to an acceptor molecule selected from an N-acetylglucosamine residue and a glucose residue.
19. (Withdrawn): An isolated polynucleotide comprising a nucleic acid sequence, wherein the nucleic acid sequence encodes a fucosyltransferase that catalyzes the transfer of a fucose residue from a donor substrate to an acceptor substrate, and wherein the fucosyltransferase has greater than 93% identity to SEQ ID NO:20.
20. (Withdrawn): The polynucleotide of claim 19, wherein the fucosyltransferase consists of SEQ ID NO:20.
21. (Original): An expression vector comprising the isolated polynucleotide of claim 16 or claim 19.
22. (Original): A host cell comprising the expression vector of claim 21.

23. (Original): A method of producing a fucosyltransferase protein, the method comprising the step of culturing the host cell of claim 22 under conditions suitable for expression of the fucosyltransferase protein.

24. (Original): A recombinant fucosyltransferase protein comprising a polypeptide has greater than 90% identity to an amino acid sequence selected from the group consisting of SEQ ID NO:16 and 18, wherein the fucosyltransferase catalyzes the transfer of a fucose residue from a donor substrate to an acceptor substrate.

25. (Original): The recombinant fucosyltransferase of claim 24, further comprising an amino acid tag.

26. (Original): The recombinant fucosyltransferase of claim 24, wherein the polypeptide is selected from the group consisting of SEQ ID NO:16 and 18.

27. (Original): The recombinant fucosyltransferase of claim 24, wherein the fucosyltransferase catalyzes the transfer of fucose to an acceptor molecule selected from an N-acetylglucosamine residue and a glucose residue.

28. (Original): A recombinant fucosyltransferase protein comprising a polypeptide that has greater than 93% identity to SEQ ID NO:20, wherein the fucosyltransferase catalyzes the transfer of a fucose residue from a donor substrate to an acceptor substrate.

29. (Original): The recombinant fucosyltransferase protein of claim 28, wherein the polypeptide consists of SEQ ID NO:20.

30. (Original): The recombinant fucosyltransferase of claim 28, wherein the fucosyltransferase catalyzes the transfer of fucose to an acceptor molecule selected from an N-acetylglucosamine residue and a glucose residue.

31. (Withdrawn): A method of making a fucosylated oligosaccharide, the method comprising:

contacting the recombinant fucosyltransferase of claim 24 with a mixture comprising a donor substrate comprising a fucose residue, and an acceptor substrate comprising a sugar or oligosaccharide, under conditions where the fusion protein catalyzes the transfer of a fucose residue from the donor substrate to the acceptor substrate, thereby producing a fucosylated oligosaccharide.

32. (Withdrawn): The method of claim 31, wherein the method further comprises a step of purifying the fucosylated oligosaccharide.

33. (Withdrawn): The method of claim 31, wherein a donor substrate is GDP-fucose.

34. (Withdrawn): The method of claim 31, wherein the fucosyltransferase comprises an amino acid tag.

35. (Withdrawn): The method of claim 31, wherein an acceptor substrate comprises a member selected from N-acetylglucosamine and glucose.

36. (Withdrawn): The method of claim 31, wherein the acceptor substrate is Lacto-N-neo-Tetraose (LNnT).

37. (Withdrawn): The method of claim 36, wherein the fucosylated oligosaccharide is Lacto-N-Fucopentaose III (LNFP III).

38. (Withdrawn): The method of claim 31, wherein the mixture further comprises lactose, a β -1,3-N-acetylglucosaminyltransferase, and a β -1,4-galactosyltransferase.

39. (Withdrawn): The method of claim 38, wherein the β -1,3-N-acetylglucosaminyltransferase is a bacterial enzyme.

40. (Withdrawn): The method of claim 39, wherein the β -1,3-N-acetylglucosaminyltransferase is from Neisseria gonococcus.

41. (Withdrawn): The method of claim 38, wherein the β -1,4-galactosyltransferase is a bacterial enzyme.

42. (Withdrawn): The method of claim 41, wherein the β -1,4-galactosyltransferase is from *Neisseria gonococcus*.

43. The method of claim 38, wherein the fucosylated oligosaccharide is Lacto-N-Fucopentaose III (LNFP III).

44. (Withdrawn): A method for producing a fucosylated glycolipid, the method comprising:

contacting the recombinant fucosyltransferase protein of claim 24 with a mixture comprising a donor substrate comprising a fucose residue, and an acceptor substrate on a glycolipid, under conditions where the fucosyltransferase catalyzes the transfer of the fucose residue from a donor substrate to the acceptor substrate on the glycolipid, thereby producing a fucosylated glycolipid.